

### **REMARKS/ARGUMENTS**

The applicant filed a Notice of Appeal for this application on August 1, 2003. The Appeal Brief was due by October 1, 2003. Accordingly, this RCE is accompanied by a request for a one-month extension of time and the associated fee of \$110.00. If a further extension is required, this response shall be treated as a request for such extension and any required fees are to be deducted from our deposit account number 02-2095.

This is in response to the final action issued by the Examiner on March 3, 2003.

In the Office Action, the Examiner has rejected claims 49-73 under 35 U.S.C. 112, first paragraph as containing subject matter which was not described in the specification in such a way to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the invention. In particular, the Examiner pointed to the language "is configured to inhibit settling out of particulate matter from the air stream" in claim 9 and "is substantially free of dead spaces" in claims 58.

Particulate matter in an air stream will remain entrained in the air stream unless separated by an aerodynamic effect, such as eddy currents produced by turbulence or a decrease in the velocity of the air to a level which is insufficient to overcome gravity. At page 14 of the specification of the application, it is provided that conduit 64 is in air flow communication with inlet 66 to second cyclone 62. This is shown in particular in Figures 3 and 13. As shown in Figure 13, conduit 64 is in communication with inlets 66 to second stage cyclones 62. As shown in Figure 3, conduit 64 extends from the outlet to the first stage cyclone to inlets 66. Conduit 64 is cylindrical in cross-section. It does not have any irregular surfaces which would create eddy currents that would disentrain particulate matter from the air stream. Thus as shown in the Figures, conduit 64 is constructed to inhibit settling out of particulate matter in the air stream. Accordingly, the applicant respectfully submits that claim 49, and all dependent claims thereon comply with 35 U.S.C. 112, first paragraph. The applicant has deleted claims 50 and 58-73.

With respect to claim 55, the applicant submits that conduit 64 is configured to maintain the airflow between the cyclonic stages. The conduit does not have any irregular portions which would result in a reduction or cessation of air flow in that portion enabling particulate matter to settle out from the air stream. Therefore the applicant respectfully submits that claim 55 complies with 35 U.S.C. 112, first paragraph.

In the final action, the Examiner has rejected claims 49-73 under 35 U.S.C. 102(b) as being anticipated by Pat. No. 3,425,192 (Davis). The Examiner pointed out that Figure 2 of Davis shows a passage 37 connecting the first and second cyclonic stages, and that the passage 37 is configured to inhibit settling out of particulate matter.

The applicant notes that conduit 37 of Davis ends at a horizontal baffle wall 45. The entrance to the second stage cyclones 52-57, however, is positioned at the upper ends 60 thereof (see column 3, lines 60-63). Accordingly, the air that exits the first stage cyclone of Davis travels upwardly through sleeve 37 and then upwardly in a second passage segment that is in effect the open area interior of the cylindrical wall 44, except for the volume occupied by cyclones 52-57. A copy of Figure 2 of Davis is provided with this response, with arrows, which have been added to indicate the flow path that would be taken by an air stream between the first and second stage cyclones of Davis. The applicant submits that the flow path of Davis, particularly in the aforementioned second passage segment clearly encourages the settling out of particles. Clearly, a flow analysis of the air flow through the second passage portion would reveal that some particulate matter would settle out of an air stream due to the larger cross sectional area of this area compared with that of sleeve 37 (see in particular Figure 3 of Davis) and the substantially enclosed flow portions defined adjacent wall 44 and between adjacent second stage cyclones denoted by "A" in the attached marked up copy of Figure 3 of Davis.

Claim 49 of the present invention specifies that the passage connects the first cyclonic cleaning stage outlet and the second stage cyclone inlets and that the passage is configured to inhibit the settling out of particulate matter from the air stream. The applicant submits that claim 49 is neither anticipated nor obvious in view of Davis, since the passage of Davis connecting the first and second stage cyclones includes both the sleeve 37 and the second passage portion which clearly does not inhibit the settling out of particulate matter.

Claim 50 has been deleted. Claims 51-57 depend from claim 49. The applicant repeats and relies on the arguments made above for claim 49, for claims 51-57.

The applicant has added new independent claim 74 and claims 75-81 which depend directly or indirectly therefrom. Claim 74 claims a vacuum cleaner having first and second stage cyclones, and a passage connecting them, wherein the passage does not increase in cross-sectional area in a downstream direction from the first stage to the second stage.

Referring to Figure 2 of Davis, the cross-sectional size of the passage clearly increases significantly as the air stream exits sleeve 37 and enters the second passage segment. The velocity of an air stream in a passage is inversely proportional to the cross-sectional size of the passage. Therefore, the air stream travels through the sleeve 37 at a first velocity and through the second passage portion at a second, reduced velocity. Consequently, depending on the weight distribution of the entrained particulate matter, some particulate matter that was entrained in the air stream at the first velocity would not remain entrained in the air stream at the second velocity. Such particulate matter would settle out of the air stream as the air stream moved through the second passage segment.

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By not increasing in cross-sectional size, the claimed passage of the present invention maintains an air stream therein at a velocity sufficient to at least keep entrained any particulate matter that it carried into the passage. The applicant submits that claim 74 is neither anticipated nor obvious in view of Davis.

Claims 75-81 depend from claim 74. The applicant repeats and relies on the arguments made above for claim 74, for claims 75-81.


The applicant submits that no new subject matter has been added to the application by way of these amendments.

Should the Examiner have any further concerns regarding the language of the application, the Examiner is respectfully requested to contact the undersigned at 416-957-1695.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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Attachments